

Human factors research is increasing safety and efficiency of the NAS by developing guidance for improving the performance of air carrier crews, general aviation pilots, aviation maintenance personnel, air traffic controllers, and NAS system maintenance technicians. Aviation medicine research is improving the health, safety, and survivability of aircraft passengers through development of recommendations for counteracting human failure conditions. Human factors researchers have produced a new training development methodology which allows air carriers to present unique training and assessment experiences for each flight crew, greatly enhancing training and assessment capabilities and benefits. FAA and NASA human factors researchers produced a manual on developing operating documents which provides guidelines on the organization, design, production, and maintenance of essential documents such as checklists, quick reference handbooks, and guides used on the flight deck. In aircraft maintenance, researchers developed guidelines on Maintenance Resource Management and error management, and profiled human performance. The Air Traffic Control/Airway Facilities (ATC/AF) human factors research program completed a human-in-the-loop high fidelity simulation to investigate controller performance and workload impacts from airspace boundary adjustments. ATC/AF also validated fairness, reliability, and validity of computer-based selection tests for screening applicants into controller and system specialist occupations. Human factors researchers are developing guidelines on the usage and design of child restraints on aircraft, assessing the crashworthiness of side-facing seats, and are collaborating with the National Institute of Occupational Safety and Health (NIOSH) on a study of cabin air quality and flight attendant reproductive health issues. Human factors researchers developed a new program to estimate the effective dose of galactic radiation received by aircraft occupants. This allows for the investigation of possible health effects of long-term exposure to such radiation. Researchers also developed an analytical technique that employs DNA probes to differentiate blood alcohol intake before death from alcohol produced after death. This will prevent incorrect conclusions from accident investigations.